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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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EXAMINER

TSAL, CAROL S W

ART UNIT

PAPER NUMBER

2857

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Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/850,371

Applicant(s)

SPARROW ET AL.

Examiner

Carol S Tsai

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 07 May 2001.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-14 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 5-10 and 14 is/are allowed.
- 6) ☒ Claim(s) 1-4 and 11-13 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____
- 4) ☐ Interview Summary (PTO-413) Paper No(s). _____
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other:

DETAILED ACTION

Claim Objections

1. Claims 1-4 are objected to because of the following informalities:

In claim 1, line 18, "will provided" should read - - will provide - -.

Appropriate correction is required.

Claim Rejections - 35 USC § 102

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

3. Claims 11-13 are rejected under 35 U.S.C. 102(b) as being anticipated by U. S. Patent No. 4,107,678 to Powell.

Powell discloses a method of determining the polarization of a signal from a series of horizontal sample values and a series of vertical sample values representing horizontal and vertical components of the signal, the method comprising the steps of: (a) calculating a plurality of series of output values, using a plurality of sets of transfer functions differing from one another, calculations using at least some of the sets of different transfer functions being conducted in parallel with other calculations using other transfer functions another (see Figs. 3-7; col. 4, line 42 to col. 6, line 51; and col. 19, lines 14-48); (b) evaluating one or more characteristics of the series of output values computed using the transfer functions of the

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different sets, and selecting one or more series produced by one or more sets of calculations based on such evaluation to thereby select one or more sets of calculations and thus select the one or more transfer function used in such set, whereby selected transfer function will provide information about the polarization of the signal (see col. 10, lines 5-57; col. 18, lines 38 to col. 19, lines 13; and col. 19, line 48 to col. 20, line 29).

As to claim 12, Powell also disclose the values in each said series having indices such that values with different indices represent components at different times, each said transfer function being applied cyclically and specifying combination of samples in the two series with a reference sample value, each said transfer functions including one or more offsets specifying the differences between the index of the reference value used on a particular cycle and the index of each other value to be combined with the reference value on that cycle, the transfer functions of different sets including different offsets, whereby selection of a particular set of calculations will select particular offsets (see col. 10, line 5 to col. 12, line 62).

As to claim 13, Powell also discloses calculating one or more characteristics of each series of output values are in parallel with calculation of the output values in such series (see col. 17, lines 38-56).

Claim Rejections - 35 USC § 103

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

5. Claims 1-4 are rejected under 35 U.S.C. 103(a) as being unpatentable over U. S. Patent No. 4,107,678 to Powell in view of U. S. Patent No. 5,311,192 to Varga et al.

Powell discloses apparatus for determining the polarization of a signal having vertical and horizontal components comprising: (a) a first series of sample values representing a horizontal component of the signal and a second series of sample values representing a vertical component of the signal (see Fig. 2 and col. 3, lines 26-32) and (b) a plurality of sets of cyclically operative calculation elements being arranged to combine values in said first and second series with one another so as to provide one or more output values for each cycle and thereby provide one or more output values for each cycle, said different ones of said sample values being arranged to supply to each such set on successive cycles of operation, whereby each such set will provided one or more series of output values when operated through a plurality of cycles, different ones of said sets of calculation elements being arranged to combine values according to different transfer functions, at least some of said sets of calculation elements being operative in parallel with one another (see Figs. 3-7; col. 4, line 42 to col. 6, line 51; and col. 19, lines 14-48); and evaluation circuits connected to at least some of said sets of calculation elements so as to receive the series of output values provided by such sets, said one or more evaluation circuits being operative to compare one or more characteristics of at least some of said series of output values and select one or more series having preselected characteristics and thereby identify the set of calculation elements which provided such one or more series (see col. 10, lines 5-57; col. 18, lines 38 to col. 19, lines 13; and col. 19, line 48 to col. 20, line 29).

Powell does not disclose one or more registers buffers for storing the first series of sample values and the second series of sample values.

Varga et al. teach one or more registers buffers (buffers 91-94) for storing the first series of sample values and the second series of sample values.

It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify Powell's system to include one or more registers buffers for storing the first series of sample values and the second series of sample values, as taught by Varga et al., in order that series of sample values can be saved for further processing.

As to claim 2, Powell also discloses said sample values in each said series have indices such that values in each said series with different indices represent a component at different times, and wherein the transfer functions used in different ones of said sets specify different offsets between the index of a reference value in one said series and the indices of one or more other values in one or both of said series combined with the reference value in each cycle (see col. 10, line 5 to col. 12, line 62).

As to claim 3, Powell also discloses comprising one or more characteristic-calculation circuits associated with each such set, each such characteristic-calculation circuit being arranged to calculate a characteristic of at least one series of output values produced by such set from the output values included in such series, the characteristic calculation circuit associated with each set of calculation operating in parallel with the calculation elements of that set, and in parallel with the characteristic-calculation circuits associated with other ones of said sets (see col. 17, line 38 to col. 19, line 13).

As to claim 4, Powell also discloses each said characteristic-calculation circuit includes an accumulator for adding an output value produced in each cycle to a total of output values (see col. 19, line 56 to col. 20, line 29).

Allowable Subject Matter

6. Claims 5-10 and 14 are allowed.

7. The following is a statement of reasons for the indication of allowable subject matter:

U. S. Patent No. 4,107,678 to Powell in combination with U. S. Patent No. 5,311,192 to Varga et al. are references closest to the claimed invention. Powell in combination with Varga et al. disclose an apparatus for determining the polarization of a signal having two orthogonal components comprising: (a) one or more horizontal sample registers for storing a plurality of sample values $A(i)$ of a horizontal component of the signal, where the parenthetical expression denotes an integer index; (b) one or more vertical sample registers for storing a plurality of sample values $B(i)$ of a vertical component of the signal, where the parenthetical expression denotes an integer index; (c) a plurality of sets of cyclically operative summers and accumulators. However, Powell in combination with Varga et al. do not teach (i) a Δ summer connected to one or more of said horizontal sample registers and to one or more of said vertical registers and operative to calculate: $\Delta(k, i, j) = A(k) - B(k + i) - [A(k + j) + B(k + I + j)]$, i, j and k being integers; (ii) a $\Sigma\Delta$ accumulator connected to the Δ summer of that set operative to add the value of $\Delta(k, i, j)$ computed by such Δ summer on each cycle to a total to thereby accumulate a total $\Sigma\Delta$ over a plurality of cycles; (iii) a Σ summer connected to one or more of said horizontal sample registers and to one or more of said vertical registers and operative to calculate: $\Sigma(k, i, j) = A(k) - B(k + i) + [A(k + j) + B(k + I + j)]$; (iv) a $\Sigma\Sigma$ accumulator connected to the Σ summer of such set and operative to add the value of $\Sigma(k, i, j)$ computed by such Σ summer on each cycle to a total to thereby accumulate a total $\Sigma\Sigma$ over a plurality of cycles; (e) said sets being connected to said registers such that during a first stage of operation a first group

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including a plurality of said sets will operate in parallel with the same value of i but with different values of j , and on each cycle k will vary and such that during a second stage of operation a second group including a plurality of said sets will operate in parallel with the same value of j but with different values of i , and on each cycle k will vary; (f) one or more ratio-determining circuits connected to said accumulators of said sets, said one or more ratio-determining circuits including at least one circuit operative to calculate a separate ratio $(\Sigma\Delta/\Sigma\Sigma)j$ for each said set in said first group resulting from said first phase of operation, whereby each such ratio $(\Sigma\Delta/\Sigma\Sigma)j$ will represent a result achieved with a different value of j , said one or more ratio-determining circuits including at least one circuit operative to calculate a separate ratio; and including all of the other limitations in the respective independent claims.

Conclusion

8. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Ghose et al. disclose apparatus and method for eliminating an interference signal from a desired signal where a difference of polarization exists or can be made to exist.

Rittenbah discloses a moving target simulator system for pulse Doppler radar including a processor for processing received radar signal and transforming the signal into patterned pulses before subjecting the patterned pulses to a 180-degree phase-shift by a phase-shifter.

Yu et al. disclose monopulse radar operation being improved by nulling a single mainlobe jammer and multiple sidelobe jammers while maintaining the angle measurement accuracy of the monopulse ratio.

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Read et al. disclose a Reduced Radar Cross-Section RF Seeker Front-End interrogates a potential target by issuing interrogation radiation toward the target and receiving and analyzing a portion of the radiation that reflects back from various surfaces of the targeted object while, at the same time, the Front-End reduces the likelihood of its own discovery by the enemy.

Hsu et al. disclose a radar jamming detection system being suitable for recognizing and distinguishing the presence of jamming and, particularly, terrain bounce jamming.

Winterstein discloses a method for geophysical exploration by analyzing shear-wave polarization directions relative to a fixed coordinate frame, for either vertical seismic profile data or surface seismic reflection data.

Willey et al. disclose a radar ECCM system for degrading the effect that a standoff noise jammer has on a radar receiving site that is tracking an incoming aerial target.

Lalezari et al. disclose a method and apparatus for selectively modulating r.f. signals received/transmitted via the radiation pattern side lobes of an r.f. antenna structure.

Contact Information

9. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Carol S. Tsai whose telephone number is (703) 305-0851. The examiner can normally be reached on Monday-Friday from 7:30 AM to 4:00 PM. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Marc S. Hoff can be reached on (703) 308-1677. The fax number for TC 2800 is (703) 308-7382. Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the TC 2800 receptionist whose telephone number is (703) 308-1782.

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In order to reduce pendency and avoid potential delays, Group 2800 is encouraging FAXing of responses to Office actions directly into the Group at (703) 308-7382. This practice may be used for filing papers not requiring a fee. It may also be used for filing papers which require a fee by applicants who authorize charges to a PTO deposit account. Please identify the examiner and art unit at the top of your cover sheet. Papers submitted via FAX into Group 2800 will be promptly forwarded to the examiner.

Carol S. Tsai

03/20/03


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